

FORM 1449 INFORMATION DISCLOSURE STATEMENT IN AN APPLICATION (Use several sheets if necessary) JAN 31 2002 PATENT & TRADEMARK OFFICE	Docket Number: 510015-269	Application Number: 09/935,352
	Applicant: Larry A. Coldren et al.	
	Filing Date: August 21, 2001	Group Art Unit: 1746

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U.S. PATENT DOCUMENTS						
EXAMINER INITIAL	DOCUMENT NO.	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
<i>QML</i>	5,045,499	09/03/91	H. Nishizawa et al.			
<i>QML</i>	5,082,799	01/21/92	R.P. Holmstrom et al.			
<i>QML</i>	5,251,225	10/05/93	S.J. Eglash et al.			
<i>QML</i>	5,293,392	03/08/94	C.-L. Shieh et al.			
<i>QML</i>	5,343,487	08/30/94	J.W. Scott et al.			
<i>QML</i>	5,358,880	10/25/94	M.S. Lebbby et al.			

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FOREIGN PATENT DOCUMENTS						
EXAMINER INITIAL	DOCUMENT NO.	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION
						YES NO
<i>QML</i>	International Publication No. WO 98/07218	19 Feb. 1998	PCT (V. Jayaraman)			
<i>QML</i>	JP 57026492 A	12 Feb. 1982	Japan (Y. Kameshima)			

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)

<i>QML</i>	K.A. Black et al., "Double-fused 1.5 μ m vertical cavity lasers with record high T_0 of 132K at room temperature" <i>Electronics Letters</i> , Vol. 34, pp. 1947-1949 (1998) <i>no month</i> Oct 1998
<i>QML</i>	V. Jayaraman et al., "Uniform threshold current, continuous-wave, singlemode 1300nm vertical cavity lasers from 0 to 70°C," <i>Electronics Letters</i> , Vol. 34, pp. 1405-1407 (1998) <i>no month</i> July 1998
<i>QML</i>	M. Ortsiefer et al., "Submilliamp long-wavelength InP-based vertical-cavity surface-emitting laser with stable linear polarization," <i>Electronics Letters</i> , Vol. 36, pp. 1124-1126 (2000) <i>no month</i> June 2000
<i>QML</i>	W. Yuen et al., "High-performance 1.6 μ m single-epitaxy top-emitting VCSEL," <i>Electronics Letters</i> , Vol. 36, pp. 1121-1123 (2000) <i>no month</i> June 2000
<i>QML</i>	O. Blum et al., "Electrical and optical characteristics of AlAsSb/GaAsSb distributed Bragg reflectors for surface emitting lasers," <i>Appl. Phys. Lett.</i> , Vol. 67, pp. 3233-3235 (1995) <i>no month</i> Jan 1995 Nov.
<i>QML</i>	O. Blum et al., "Highly reflective, long wavelength AlAsSb/GaAsSb distributed Bragg reflector grown by molecular beam epitaxy on InP substrates," <i>Appl. Phys. Lett.</i> , Vol. 66, pp. 329-331 (1995) <i>no month</i> Jan 1995
<i>QML</i>	J. Boucart et al., "1-mW CW-RT Monolithic VCSEL at 1.55 μ m," <i>IEEE Photonics Technology Letters</i> , Vol. 11, pp. 629-631 (1999) <i>no month</i> June 1999
<i>QML</i>	T. Uchida et al., "CBE Grown 1.5 μ m GaInAsP-InP Surface Emitting Lasers," <i>IEEE Journal of Quantum Electronics</i> , Vol. 29, pp. 1975-1980 (1993) <i>no month</i> June 1993

EXAMINER <i>QML</i>	DATE CONSIDERED 9-03
EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; draw line through citation if not in conformance and not considered. Include copy of this form for next communication to the Applicant.	

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GM	5,392,307	02/21/95	Y. Sugiyama et al.			
GM	5,416,044	05/16/95	T. Chino et al.			
GM	5,468,343	11/21/95	T. Kitano			
GM	5,568,504	10/22/96	A. Köck et al.			
GM	5,588,995	12/31/96	P. Sheldon			
GM	5,631,472	05/20/97	J.E. Cunningham et al.			
GM	5,877,038	03/02/99	L.A. Coldren et al.			
FOREIGN PATENT DOCUMENTS						
	DOCUMENT NO.	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION
						YES NO
OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)						
GM		M.G. Peters et al., "Band-gap engineered digital alloy interfaces for lower resistance vertical-cavity surface-emitting lasers," <i>Appl. Phys. Lett.</i> , Vol. 63, pp. 3411-3413 (1993) <i>no month Dec 1993</i>				
GM		E. Hall et al., "Electrically-pumped, single-epitaxial VCSELs at 1.55 μ m with Sb-based mirrors," <i>Electronics Letters</i> , Vol. 35, pp. 1-2, (1999) <i>Aug 1999 no month</i>				
GM		G. Almuneau, et al., "Improved electrical and thermal properties of InP-AlGaAsSb Bragg mirrors for long-wavelength vertical-cavity lasers," <i>IEEE Photonics Technology Letters</i> , Vol. 12, pp. 1322-1324 (2000) <i>no month Oct 2000</i>				
GM		E. Hall et al., "Selectively Etched Undercut Apertures in AlAsSb-Based VCSELs," submitted to <i>IEEE Photonics Technology Letters</i> , Vol. 13, pp. 97-99 (2001) <i>no month Feb. 2001</i>				
GM		G. Almuneau et al., "Molecular beam epitaxial growth of monolithic 1.55 μ m vertical cavity surface emitting lasers with AlGaAsSb/AlAsSb Bragg mirrors," <i>Journal of Vacuum Science & Technology B</i> , Vol. 18, pp. 1601-1604 (2000) <i>no month May 2000</i>				
GM		J.W. Scott et al., "High Efficiency Submilliwatt Vertical Cavity Lasers with Intracavity Contacts," <i>IEEE Photonics Technology Letters</i> , Vol. 6, pp. 678-680 (1994) <i>no month June 1994</i>				
GM		R.N. Naone, and L.A. Coldren, "Tapered Air Apertures for Thermally Robust VCL Structures," <i>IEEE Photonics Technology Letters</i> , Vol. 11, pp. 1339-1341 (1999) <i>no month Nov 1999</i>				
GM		J.K. Kim et al., "Epitaxially-stacked multiple-active-region 1.55 μ m lasers for increased differential efficiency," <i>Applied Physics Letters</i> , Vol. 74, pp. 3251-3253 (1999) <i>no month May 1999</i>				

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U.S. PATENT DOCUMENTS						
EXAMINER INITIAL	DOCUMENT NO.	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
SM	5,974,073	10/26/99	P.J. Cannard et al.			
SM	6,021,147	02/01/00	W. Jiang et al.			
SM	6,057,560	05/02/00	M. Uchida			
SM	6,061,380	05/09/00	W. Jiang et al.			
SM	6,127,200	10/03/00	Y. Ohiso et al.			
SM	6,207,973 B1	03/27/01	S. Sato et al.			

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	DOCUMENT NO.	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION	
						YES	NO

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)		
SM	J. Piprek et al., "Minimum temperature sensitivity of 1.55 μ m vertical-cavity lasers at —30 nm gain offset," <i>Applied Physics Letters</i> , Vol. 72, pp. 1814-1816 (1998)	no month Apr 1998
SM	E. Hall et al., "Increased Lateral Oxidation Rates of AlInAs on InP using Short-Period Superlattices," <i>Electronic Materials Conference, Journ. Electron. Materials</i> , Vol. 29, No. 9, pp. 1100-1104 (2000)	no month
SM	E.R. Hegblom et al., "Small efficient vertical cavity lasers with tapered oxide apertures," <i>Electronics Letters</i> , Vol. 34, pp. 895-896 (1998)	no month Apr 1998
SM	G. Almuneau et al., "Accurate control of Sb composition in AlGaAsSb alloys on InP substrates by molecular beam epitaxy," <i>Journal of Crystal Growth</i> , Vol. 208, pp. 113-116 (1999)	no month
SM	J.K. Kim, et al., "Room-temperature, electrically-pumped multiple-active-region VCSELs with high differential efficiency at 1.55 μ m," <i>Electronics Letters</i> , Vol. 35, pp. 1084-5, No. 13, pp. 1-2 (1999)	no month June 1999
SM	M. Sugimoto, et al., "Surface emitting devices with distributed Bragg reflectors grown by highly precise molecular beam epitaxy," <i>Journal of Crystal Growth</i> , Vol. 127, pp. 1-4, (1993)	no month
SM	M. Yano, et al., "Time-resolved reflection high energy electron diffraction analysis for atomic layer depositions of GaSb by molecular beam epitaxy," <i>Journal of Crystal Growth</i> , Vol. 146, pp. 349-353 (1995)	no month

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Substitute for form 1449A/PTO INFORMATION DISCLOSURE STATEMENT BY APPLICANT (use as many sheets as necessary)				Complete if Known	
				Application Number	09/935,352
				Filing Date	August 21, 2001
				First Named Inventor	Larry A. Coldren et al.
				Art Unit	1746
				Examiner Name	Not assigned
Sheet	1	of	1	Attorney Docket Number	510015-269

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No. ¹	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document
		Number -Kind Code ² (if known)		
		US-4,829,347	05/09/89	Cheng et al.
		US-5,245,622	09/14/93	Jewell et al.
		US-5,422,901	06/06/95	Lebby et al.
		US-5,693,180	12/02/97	Furukawa et al.
		US-5,719,891	02/17/98	Jewell
		US-5,985,683	11/16/99	Jewell
		US-5,991,326	11/23/99	Yuen et al.
		US-		

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FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No. ¹	Foreign Patent Document	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T ⁶
		Country Code ³ -Number ⁴ -Kind Code ⁵ (if known)				

OTHER PRIOR ART – NONPATENT LITERATURE DOCUMENTS

Examiner Initials	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published	T ²
		C. Starck, "Long Wavelength VCSEL with Tunnel Junction and Metamorphic AlAs/GaAs Conductive DBR", LEOS '99: IEEE Lasers and Electro-Optics Society 1999 12 th Annual Meeting, November 1999, Vol. 1, pp. 139-140, especially Figure 1.	
		K.D. Choquette et al., "Room Temperature Continuous Wave InGaAsN Quantum Well Vertical-Cavity Lasers Emitting at 1.3 μm ", ELECTRONICS LETTERS, 03 August 2000, Vol. 36 No. 16, pp. 1388-1390.	

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Examiner Signature		Date Considered	9-03
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¹Applicant's unique citation designation number (optional). ²See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. ³Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. ⁶Applicant is to place a check mark here if English language Translation is attached.